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fig: 2.



fig: 3.



fig: 4.



*Part of a Letter from Mr. Leuvenhook, Dated
June 9th. 1699. concerning the Animalcula
in Semine humano, &c.*

IT did happen so that a certain Dr. of *Physick* did Accomodate me with a Book called *Novelles de la Republique des Lettres*, and shewing me on the 552 pag. an Extract in *Latin*, of a Letter Written by Mr. *Dalen Parius* to the Writer of the *Novelles*, wherein the Author of the Letter amongst the rest says thus,

At length it has happened beyond expectation, *viz.* by way of a Magnifying-Glass, so good (without praise be it said) that none better can be made, because it doth hardly exceed the smallest visible Point in bigness, &c.

When he is speaking about the small Animals in the Seed of the Male, he says thus

Besides these, we discovered some small Animals, of the same shape, as are in the *Pools* in the Month of *May*, &c. like the Spawn of Frogs that is in small Waters; and this Body doth hardly exceed the bigness of a small Corn-grain, the Tail being Four or Five times as big as the Body; these do move themselves with a strange quickness, &c. and make with the beating of their Tail, small Bubbles, which they also did poll along.

How should we have believed, that in them, a Human Body was Lockt up, &c. Yet notwithstanding we have seen it with our own Eyes: For when we did Contemplate every thing with great Curiosity, one did appear that was somewhat bigger, &c. that had pull'd of the Skin, wherein it was Locked up.

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This showed clearly the two naked Thighs, the Legs, the Breast, &c. Both the Arms, &c. the Skin being pulled up somewhat higher, did cover the Head like a Cap.

We could not discern the difference of Sex, &c. and at the same time it pulled off it's Skin it died. This changing, although hitherto never heard of, must seem to no Body strange, or wonderful; because many other Animals change their shapes daily, whereof possibly the opinion of the Transmigration of the Souls, hath drawn it's Original. Moreover, we did also observe parts of the Blood, which we found shining and Globular, &c. the Diameter about half a Line, driving stuff like unto seed, which perhaps is useful to Carry the Humours through the Body. These Particles do sink, &c. and grew into one, when the Moisture was gone. We shall perhaps shortly publish some Writings, that may perhaps not be useless, &c. but pleasant and intermixt with several Observations, we made about the parts, causing venereal and other Diseases; which no body did yet to this day, but only seek after; and also many other things concerning the Circulation, and feeding of the Juices in Plants. In the mean while, we had a mind to make this publick, that the Learned World might give us their opinion and Sense thereof.

Concerning this last Writing, I take the freedom to say to you.

That what concerns his Magnifying-glass, of so incomparable smallness, as ever was made, we will let it be so; I believe that amongst the Members of your Royal Society, some of an equal smallness are to be found. But to mount such small Glasses well, requires a far greater judgment, then to make them.

Concerning my Self, although they have been made
by

by me for these Forty Years almost, of an Extraordinary smallness, yet they have been but little used by me ; for according to my judgment, they are not fit to make the first Discoveries, for these that are ground of a bigger Diameter, are more fit for that.

I have discovered the Saline parts, and the shape of the *Animalcula* in the Masculine Seed, and sent the same to you in the Year, 1677. Which also are come out in Print in your Philosophical *Transactions*, Numb. 142. fol. 1042. But that one should find such a perfect Human shape, as I have sent herewith which I got Drawn after the Figure out of the said *Novelles*, Marked with 3 and 4 ; I am certainly perswaded you will not allow of it.

We know that the small Animals in the Masculine Seed of a Frog, have no Similitude at all, with them that come out of the Eggs of a Frog, and if we Contemplate the Animals that are come of the Eggs of the Frog, and are grown bigger, by the help of a Magnifying-glass, they have no Similitude at all with these, we find in the Masculine Seed of a Man, save only that they both have Tails, and so can Swim, and if we Anatomise one of these Animals that come out of the Egg of a Frog, that is come to a Considerable bigness, yet we can not discover their Legs, but when it is grown a hundred and more times as big as it came out of the Egg, then the Legs begin first to shew themselves.

Now is it certain, that although we can not discover the Shape of a Frog, in an Animal that is come from the Egg of a Frog, when we Anatomise it, that yet notwithstanding the Frog is Lock'd up in it.

Now if an Animal, in the Masculine Seed of a Beast or Fowl, was provided perfectly with all it's Members, so that by the help of a Magnifying-glass they might be discovered, they endeavour to make us believe else, then these Animals must from time to time, as they grow

grow bigger, encrease in their perfection. But that it is not so, we see by the Observations that the highly Learned *Malpigi* has made, about the beginning of a Chicken in the Egg, for as much as was then in his power.

As what concerns me, I cannot imagine, that an Animal of the Masculine Seed, can pull off it's Ski nor Film, or to free it self of it, but that the Membranes or Skins are strong, and more than one, and the Membranes wherein the Creatures lye in the Mothers are not depending from the Mother (*uterus*) but that the Animals that are injected into the *uterus*, are only brought there for to grow bigger, which Membranes we call the after burdens.

I have had brought several times to me, uteruses of Sheep, after they had been some days before impregnated, and took out of them, the same wherein the creature did lye, that would have come to be a Lamb.

When we did look upon this Creature through such a Magnifying-glass, as we judged to be most convenient for it, we were forced to look out very sharply, to discern the parts of this Body from one another; partly because all the parts of so small a Creature, are very soft and smooth, and partly because this Creature was in a round or Globular Posture, so that when we came to unfold them, by the help of a gentle hand, we broke several of the Members.

We see also, that when a small conception cometh away from it's Mothers Womb before it's time, that the Skins wherein it lyeth, are perfectly whole, and that the Creatures therein, are not extended strait, but they lye round, and in such a posture, that it can be no better contrived.

The first figure in the before mention'd *Novelles*, represents it's Saline Figures, and the second Figure sheweth an

an Animal in the Masculine Seed of a Man, which we have Contemplated a hundred times and oftner, and a few days since above 1000 times which since we have all kept very carefully ; but hitherto I could not yet discover any such Creature as this Cut sheweth to us, for as this delineated Animal (and such an other kind of delineation is also come to my hand) has it's Tail almost every where, or quite through of the same thickness, and is split at the end, as if it was made on purpose to take hold therewith of something, yet we see every where, that the Tail is the longer the smaller to the end, nay to that degree, that where it doth lye the thinness thereof makes us loose it's sight.

Now if we consider the Postures of the Figures of 3 and 4, which show the shape of a Human Body so exactly, so that they lay straight extended, with their hands upon the Abdomen, and the Two Legs Straight out by one an other, I believe that no Member of the Royal Society will allow of the discovery of such a Creature, but rather take it to be a Fancy or imagination, then a real truth.

For Experience teacheth us daily, that all kind of Creatures, that lye in the *uterus*, make a roundish or Globular Figure, as well as the Scituation will allow of it, as I have already said before, that the Mother in Bearing of the Fruit, may be less hindered, and *Secondly*, Because the Foetus laying in that Posture is the more easy, and then because a round Figured Body doth lye in less room, then any other.

This being so, how is it possible to comprehend, that such a perfect Human Body, could be comprehended in so small a place, quite stretched out, and what is yet more, that it should have such a Motion, as to break in pieces, that wherein it was wrapt up, and to stretch it's self at length, which is altogether contrary to Natural experience, for we never see that a new Born Child, doth stretch out it's Limbs, but it doth always draw it's Arms and Legs inwards, according to the Posture it did lye in, in the Mothers Womb.

We have formerly observed, that in all Seeds that come to our hands, the Plant of a Tree or any Herb, or Shrub, was included in it, that the Kernel or Pith, is only for Preserving, or to Nourish and Feed the Plant that doth lye between them until it can shoot a Root sufficient to draw Nourishment enough out of the Ground it stands in to Feed it.

It is so, that in Wheat, Barly, &c. we have discovered fe-

veral Plants in each of them, and accordingly, in each of them are several Acres of Wheat or Barly ; for if they were not included within them, how could they come out of them. And yet much less do the Ears of the Wheat, shew us their Wheat-Corns, when we Anatomise them, for this great Mystery doth remain hid from our Eyes.

I put this down as a certain truth, that the shape of a Human Body is included in an Animal of the Masculine Seed, but that a Mans Reason shall dive or penetrate into this Mystery so far, that in the Anatomizing of one of these Animals of the Masculine Seed, we should be able to see or discover, the intire shape of a Human Body, I cannot comprehend.

As to what concerns my Magnifying-glasses, I will not brag of them, I make them as good as possible I can in my power, and I must say that several Years since, I have not only Ground them still better and better, which is a matter of consequence, but I have also Mounted them better from time to time, which is also very Material : I have known some that have made Magnifying-glasses, and have bragged of them, and yet were not fit to judge, whether a Glass did discover well or no, and seeing that every one is not fit, to judge well and truly of a Magnifying-glass, much less can he be fit to make new Discoveries, and thus doing so, no Body must Publish or bring to light, new Discoveries, and judge by one sight, but he must see the same over and over several times, for it doth happen often to me, that People looking through a Magnifying-glass, do say now I see this, and then that, and when I gave them better Instructions, they saw themselves mistaken in their opinion, and what is more, even he that is very well used to look through Magnifying-glasses, may be misled by giving too sudden a Judgment, of what he doth see.

In the meanwhile that I am busie in Writing these, I have 8 or 10 Magnifying-glasses lye before me, which I have set in Silver my self, and although I have never had any Instruction at all how to Work any Mettal with Hammer or File, yet I mount my Glasses and Tools so well, that Workmen in Gold confess themselves that they are not able to do the same.

These Magnifying glasses Magnify some more then others, and before them stand the Animals, that are in the Masculine Seed of Mankind.

These

These Magnifying glasses are thus placed, that although I have some-times Twenty five, sometimes a Hundred coming before my Eye sight, and in the space of the beating of a Pulse, others do appear again; yet not one came ever before my Eyes, that was $1\frac{1}{2}$ times as big again as any of the rest, which I found in great numbers, so that it is a certain Maxim to me, that the said Animals do not grow bigger, as long as they are in the *uterus*, and have received yet no Nourishment from it.

Now if an Animal doth come a little to far from the Focus of the Magnifying glass, then we see in a Glass that doth Magnify very much, only the highest parts of the Body, and thus the Animal doth appear Less to us, then it would do otherwise, and if we put the Animal somewhat nearer to the Glass, then we begin to see the outside thereof, and by placing the Animals so, we may easily judge some to be bigger then the others.

It may also happen, that when Two Animals lye by one another, or lye partly one upon another, so that we see but only one Tail, we may in such a Case judge that we see but one Animal, that exceeds the other in bigness very much, and in so doing, we conceive, to see something, that in reality was not true.

In this sight looking narrowly to it, we see very well that the parts that are within the Body of the Animals, stand somewhat out of the Skin; now to look into it with a roundish part, and then two or three parts again that stand out, and then again one and sometimes two parts that are longest and lye one by the other, and that each of these parts Represents a clearer being then the other, we see in each Body, that is lying separated from the other parts a peculiar shape, for as now one Animal does lye with it's back towards us so can another again lye with the Belly towards us sideways. In short, it can appear or Represent it self before us, in so many peculiar shapes or postures, as any great Beast, can Represent it self before our naked Eyes in standing, turning, winding, or lying. Nay, it is possible that Four Animals may lye together in such a Posture, that Two of their Tails might Represent the Arms, and the other two the Legs.

I cannot omit to tell you, &c. how I come to handle these Animals in the Masculine Seed, so that I may see them as distinctly, as ever it is possible. For if we look upon the

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Masculine Seed of any Animal so as it is, then the Multitude of these Animals do not only deceive our sight, but they also hinder the exact inspection and contemplation of them. But I take only a little thereof the bigness of a Pins-head, and mix it with a common drop of clear and clean Rain water. This stuff thus mixt, I spread about, and that so thin as I can possibly event to the greatest extremity, on a very clear Glass, that I have by me ready made for that purpose, and in so doing, I do not only bring a thinner Watry moisture about the Animals, but they lye dispersed in many places so far asunder, that they do not touch one another. And thus doing I reckon to be the best way and means, to contemplate these Animals in the ground with the utmost accuracy that is possible. Part of these spread Animals, I fix before such Magnifying-glass, as I Judge to be most convenient for that purpose, and thus they seem to lye before my sight, as in open Field, which I contemplate in a clear day, and sometimes by Candle-light, and to have still more light, I use sometimes a metal Concave Looking-glass, but above all things you must have a care, not to make your view in the Sun shine, for if you do so, the Circumference of each Animal, will have almost as many Colours, as we see in the Rainbow.

I have also observed, that between these Animals, did lye some smaller Roundish parts, and these have seemed to me, as if they had Tails, wherefore I took into consideration, whether these parts might not be young Animals, for certainly these Animals shall procreate, and from small ones grow to their perfect bigness, and who doth know, whether these Animals do not come to their perfect bigness in the space of Twenty Four hours, as we have observed in small Water Animals, and also, if any of these Animals come to dye, they do not serve as Food for the growing of the rest.

And thus I imagine that I have satisfied the desires of the Author, *viz.* to confer my Observations, and to give my opinion thereabout; which I think I cannot better Address than to You.